



**A study of the Impact of cultural diversity on the  
Technological Innovation process in the Nuclear Energy  
Corporations**

**أثر التنوع الثقافي على عملية الابتكار التكنولوجي في شركات الطاقة النووية**

**by**

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## **Abstract**

This research paper studies the effect of cultural diversity on the technological innovation procedure in the nuclear sector in the UAE. The research is based on both secondary and primary resources of information. The main points in this study is to show the advantages of cultural diversity in recognition of innovation procedure, the driving forces for nuclear technology innovation, the nuclear innovation programme, the contests of cultural diversity in recognition of the innovation technique and the current approaches to accomplish the cultural diversity for the performance of the innovation procedure.

For the primary data, it has been gathered from a sample of the staff working in the Emirates Nuclear Energy Corporations, which has been selected from a big group to run the primary research.

Subsequently the will concentrate on the literature review to find the essential data and dexterity for leading the study.

In addition, the procedure specifies the proper study approaches for acting the study work. After the information has been collected it has been analysed using statistical tools to reach to results and outcomes, and illustrations are additionally included. The data analysis will critically use the Univariate analysis model to achieve the research objectives. For the research the probability sampling, specifically the simple random sampling, has been chosen to ensure that, everyone in the population have the chance to participate in the questionnaire. In the contemporary framework, there are 75 employees of the Emirates Energy Corporation (ENEC) are selected to accumulate the measurable information, whereas three managers from the same institute are picked for assembling the descriptive and valuable information.

Nevertheless, the study displays conclusion that summarize the whole research results and recommends a variety of approaches to create better and positive impact of the cultural diversity practices in the nuclear segment to improve the innovation procedure in this critical sector. It includes the costs of communicating, and the access of market, unique concepts, as well as, the reserve apportionment are the highly vital features of the innovation procedure in the nuclear segment.

lastly, the different limitations to the study as well as both practical and theoretical implications are introduced. Such limitations included the valuable information are not available to be found from different well known experts due to the short specific period to do the research, in addition to the little amount of money provided some obstacles to be able to use an expert software to examine and check the information and the sample size is relatively limited. In addition, there are some recommendations and action plan for some of the tips that can help in making the best use of cultural diversity in the nuclear industry to foster technological innovation, such as Providing executive level support and accountability, creating an systematic use of scientific and technical knowledge approaches to increase the denoting and the real capability to do actions, and creating a system for handling the unfairness between the selected employees.

## نبذة مختصرة

تهدف الورقة البحثية الحالية إلى معرفة أثر التنوع الثقافي على عملية الابتكار التكنولوجي في القطاع النووي بدولة الإمارات العربية المتحدة. وتستند الدراسة إلى كل من الموارد الثانوية والأولية للمعلومات. وتشمل الموارد الثانوية المستخدمة موارد موثوقة مختلفة من الكتب والمجلات والدوريات والمواقع الموثوق بها. وبالنسبة للبيانات الأولية، فقد تم جمعها من عينة من الموظفين العاملين في شركات الإمارات للطاقة النووية، والتي تم اختيارها لإجراء البحوث الأولية. هدف الدراسة الرئيسي هو معالجة الأهداف والغايات، بيان المشكلة وكذلك نطاق الدراسة في هذه الورقة. ثم ستركز الورقة على مراجعة الأدبيات للحصول على المعرفة والمهارات اللازمة لإجراء البحوث. وعلاوة على ذلك، تشير المنهجية إلى الاستراتيجيات البحثية المناسبة لأداء العمل البحثي. بعد جمع البيانات تم تحليلها باستخدام أدوات إحصائية للوصول إلى النتائج والتائج، كما يتم تضمين الرسوم التوضيحية. كما توفر الورقة الاستنتاج الأنسب لعمل البحث بأكمله وتوصي بعدة استراتيجيات لتحسين الأثر الإيجابي لممارسات التنوع الثقافي في القطاع النووي من أجل تحسين عملية الابتكار في هذا القطاع الحرج. في النهاية يتم إدخال القيود المختلفة على الدراسة وكذلك كل من الآثار العملية والنظرية. وبالإضافة إلى ذلك، هناك بعض التوصيات وخطة العمل لبعض النصائح التي يمكن أن تساعد في تحقيق أفضل استخدام للتنوع الثقافي في الصناعة النووية لتعزيز الابتكار التكنولوجي.

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## **1. Introduction:**

### **1.1. Background:**

In the world of today, innovation is considered as one of the most effective tools that ensure the success of businesses and organizations, so the research area focused on innovation and the factors impacting it has become a real rich area. As knowledge, skills and experience are all considered as critical elements of innovation and success, the movement of people in a population is known as the most crucial mechanism for moving from place to place such as spreading these three elements from one country to another. That can be attributed to the fact that a massive quantity of the information our bodies understand without conscious thought. Such as individual skills that could be repositioned with an operative geographic movement for the expert employees from the same geographic area to another. There are different phenomena that have emerged in the new world, eased the mobility of skills, knowledge and experience, and enabled the highly skilled employees from all over the world to move from one country to another. This movement helps in the cultural movement, as cross-cultured employees are found together in just one work place, so they benefit and are benefited at the same time. The benefit which these employees get is represented in enhancing their income and living conditions, and additionally to develop their knowledge, experience and skills .While their employers are benefited from this cultural diversity to enhance the productivity and performance in their organizations , and additionally to enhance and brighten the image and reputation if the organization .

There are some sectors that need innovative ideas and outstanding efforts to develop and to be more productive and one of these sectors or industries is the nuclear industry. One of these industries is the nuclear industry that experiences a great quantity of cultural diversity because of the abilities flow through the transnational organizations working in this area.

Nevertheless, there are opposite views, where the development of variety could be known as one of the external factors affecting the development of the invention and innovation in the nuclear sector. In support of this argument Rayner (2013) obtained a essential facts and figures that the economic growth related to innovation can be counted as a positive external factor of the diverse, such as the skilfully field. Furthermore, the lengthy uneven spreading of information by the

transferred and expert employees in the worldwide stout connection between countries and cities, opposes the neoclassical theory of whole information Spill over. It has been observed by Berger and Huntington (2012) that the failure of the generation and absorption of the innovative ideas present the ultimate reason of falling out from the development. conversely, the recent researches have exposed that the capability of the mingle of the unspoken information by the differentiated labour force is the main element for locating the most substantial development.

**Background of nuclear sector:**

The nuclear segment is consist of certain international firms, such as the various members. Those members are reached from parties to cooperate with industries. Furthermore, with the United Nations and different institutes of inter-government that plays a main role and at the same way paying attention to the set-ups of the nuclear segment. There are various areas which are highly effective for the extensive performance of the entire sector (Trax *et al.* 2015). The operations of those zones are stated below:

**Nuclear Reactor builders and Operators:** These are different institutes manage their business at the centre of the nuclear segment by producing electricity among a nuclear power plants depends on the reactor technology.

**Uranium mining, nuclear fuel, storage and waste:** These zones are sheided by the institutes that serve up the inventor and the machinist of the nuclear device by supplying the nuclear fuel.

**Regulators:** The self-national governing organization plays a main feature by offering a easy operation of the nuclear segment.

**R&D:** the most beneficial and effective part of this specific zone is the studying and researching, in addition developing sections for adjusting the principles and guidelines such as equipment's figuring and design.

**Finance:** The financial organizations are the paramount factor for managing the investments as well as financial services.

**National and international Organizations:** The implementation of the nuclear power agreements are conducted by the UN's International Atomic Energy Agency (IAEA). The World Association of Nuclear Operators (WANO) greatly focuses on the improvement of the safety as well as reliability in this sector. Moreover, the common

concern of various collaborative companies is addressed by the World Nuclear Association (Parrotta *et al.* 2014).

### ***Peaceful Nuclear Energy in the UAE***

The United Arab Emirates has an ambitious nuclear power program, and it works in association with the International Atomic Energy Agency, and gets a considerable public support. The country has received a bid amounting \$20 billion from a South Korean group to be used for building 4 of the commercial nuclear power reactors, by the year of 2020, and the UAE works hard so as to use the peaceful, citizen nuclear energy program that keeps the uppermost approved safety and security standards, as well as the reduction and control for the working clarity. The UAE government has made good efforts for using the nuclear energy to meet the different and diversified energy needs of the country, like the country need for the electrical energy. Concerning the usage of the nuclear energy in order to generate electrical energy, a local nuclear energy program has been launched according to a deep and detailed estimation for the future needs of the country. A pilot study has shown that the local yearly maximum demand for the electrical energy in the UAE is estimated to reach 40,000 megawatts in the year of 2020, showing a rapid increase in the annual growth rate. To meet these extended needs for electricity, the UAE has examined the different available options for meeting this demand for electrical energy. The evaluation conducted was broad-ranging and resulted in the subsequent realizations:

- The electricity sector in the UAE can be supplied by natural gas, but in the future it will not be sufficient for meeting the future demands for electricity.
- The burning of liquids, such as crude oil and diesel, could be logistically feasible but expensive and highly damaging to the surrounded environment.
- Coal-fired power generation is relatively cheap, but is not accepted from an environmental point of view, and possibly vulnerable from a security of supply point of view.

- Lastly, the use of the renewable energy , as well as the other alternative supplies of energy could be capable to supply just 6% to 7% present t of the needed electricity production capacity by the year of 2020.

### ***The UAE Policy on Nuclear Energy***

According to (Nuclear Power in the United Arab Emirates, 2017), when the UAE develops its nuclear energy policy, the government has clarified its peaceful objectives totally. A policy document issued in the year of 2008 summarized a sequence of obligations , involving the decision of declining the local upgrading and reusing the nuclear fuel, the dual parts of the nuclear fuel cycle , which could be used for different non-peaceful purposes. There are extra commitments from the side of the UAE government regarding the use of nuclear energy for peaceful purposes, such as:

1. The UAE commitment to absolute operational transparency.
2. The UAE commitment to practicing the uppermost standards of non-proliferation.
3. The UAE commitment to the uppermost standards of safety and security.
4. The UAE develops its peaceful local nuclear power ability in collaboration with the governments and organizations of liable nations, in addition to the help of suitable professional organizations.
6. The UAE commitment to managing its peaceful local nuclear power program in a way that highly certifies long-term sustainability.

In April 2009, the UAE and the International Atomic Energy Agency (IAEA), has signed the “Additional Protocol to the Comprehensive Safeguards Agreement”, which creates a technique for strict inspections and checks for the nuclear facilities and operations.

The UAE Nuclear Law considers the responsibilities arising from the Additional Protocol and extra international means. The UAE observes the appliance of an inclusive safeguards agreement, boosted by the IAEA Additional Protocol, as a significant element of its model for the acceptance of peaceable nuclear energy. The UAE has additionally signed two-sided collaboration arrangements in the area of the peaceful nuclear energy with many countries, involving the countries of France, USA, UK, Australia, Japan, Russia, Argentina and Canada. (Nuclear Power in the United Arab Emirates, 2017)

### **Nuclear Energy Infrastructure and Implementation**

According to Lee, K. and Lee, S., (2013), the fundamental bodies that implement the UAE nuclear energy programs include the following:

- **Federal Authority for Nuclear Regulation (FANR):** which is one of the self-governing federal agencies, and it is controlled by regulation and certification for the different nuclear energy activities in the country. This authority is headed by Chorister Viktor son, who is a previous high-level official who was working with the Swedish Nuclear Safety Authority, and additionally has a long history as a member of the International Atomic Energy Agency (IAEA).
- **Emirates Nuclear Energy Corporation (ENEC):** It is an organization that is totally owned by Abu Dhabi government, and it is charged with promoting nuclear power plants in the UAE. This organization takes the responsibility for constructing Abu Dhabi's nuclear plants.
- **International Advisory Board:** It is a consultative body composed of nine past heads of the local supervising bodies, pioneers in the nuclear industry, and well known academic authorities. The reporting within this organization is to the Ministry of Presidential Affairs directly, and it supplies independent evaluations for the position and performance of the different bodies related to the civil nuclear program in the UAE. The organization additionally takes the responsibility of the analysis of the achieved progress in the address of the different areas of possible concern.



The Emirates Nuclear Energy Corporation intends to construct four of the nuclear reactors, located at a location in Baraka, in the western part of the United Arab Emirates. The four reactors are planned to provide a supply of 5.6 Giga watts of the low-carbon electricity. According to the plans, the first reactor should start work in this year of 2017, while the second reactor is planned to start work the next year of 2018. Regarding the two other reactors, they are scheduled to start work in the two years of 2019 and 2020.

Regarding the capacity of this ambitious nuclear energy program, it is expected to achieve the goal of meeting about 25% of the overall needs of the UAE of energy in the year of 2020. This program will provide safe, and clean electrical energy, that is highly reliable and efficient. The reactors are designed, so that zero carbon emissions will be produced.

**US-UAE Peaceful Nuclear Energy Cooperation:** In the year of 2009, a US-UAE mutual arrangement for peaceful nuclear cooperation was executed, developing the international standards of nuclear non-explosion, safety and security, which was named the "123 Agreement," the deal starts a required legal structure for commerce in civilian nuclear energy among the two countries.

There are numerous US firms included in the United Arab Emirates energy program, including the following:

- **Westinghouse, with its main office in Cranberry, Pennsylvania:** This organization belongs to the KEPCO team and is delivering main components; composition and control equipment; as well as the design of the technical and engineering support services.
- **Virginia-based Lightbridge Corporation:** This organization offers consulting services to the United Arab Emirates regarding the design, promotion and management of the fundamental firms needed for implementing a nuclear energy program that matches the uppermost universal standards. (Stanek, 2009)

- **Englewood, Colorado-based CH2M Hill:** which has won a 10- year arrangement for managing the nuclear program in the United Arab Emirates in the year of 2008?
- **Paul C. Rizzo Associates:** which is a pioneer in the universal engineering and consulting. The headquarter of the organization is in Pennsylvania, and it has worked on site placement and engineering throughout the planning process. (Stanek, 2009)

There are additionally non-Proliferation instruments settled by the United Arab Emirates:

- IAEA Treaty on Non-Proliferation of Nuclear Weapons, which was created in the year of 1995.
- IAEA Comprehensive Safeguards Agreement, which was created in the year of 2003.
- IAEA Convention on the Physical Protection of Nuclear Material, which was created in the year of 2003.
- UN Comprehensive Test Ban Treaty, which was created in the year of 2000.
- UN Security Council Resolution 1540, which was created in the year of 2004.
- UN International Convention for the Suppression of Acts of Nuclear Terrorism, which was created in the year of 2005.
- IAEA Additional Protocol to Safeguards Agreement
- IAEA Amendment to the Convention on the Physical Protection of Nuclear Material and Nuclear Facilities. (Stanek, 2009)

### 1.2. Problem statement:

In the 21<sup>st</sup> century the international companies of the nuclear sector have been concentrating on the accomplishment of the dissimilarity cultures, as well as expert labour force in sequence to create and apply creative ideas. As the cultural

diversity in itself is a concept of multidimensional attributes, such as identity, religion, ethnicity as well as language; the firms are in dire need of distinct framework for identifying the best course of action to ensure their success (Schein, 2014). The development of the high submission of the different labour force has showed the shortage of effectiveness of the obtainable operative strategy and preparation. Henceforth, the accurate employment of the differently labour force for innovation procedure still as a challenge. The problem going to be studied throughout this research paper is the influence of the differentiation of cultures on the innovation procedure in the Emirates Nuclear Energy Corporations.

### **1.3. Aim and Objectives:**

This study goal is to distinguish, and to analyse the connection between the numerous factors of cultural diversity and the innovation procedure in the nuclear zone for searching for the effectiveness of the differentiation in cultures on the nuclear segment's innovation process. The intentions of the research are pointed below:

- To distinguish the different keys of cultural diversity in the nuclear sector
- To distinguish the driving forces for nuclear technology innovation
- To distinguish the Nuclear innovation programmes and to analyse the connection between different keys of cultural diversity and the innovation procedure in the nuclear sector in the UAE
- To provide the methods to use the cultural diversity for proving a better innovation procedure in the nuclear sector in the UAE

### **1.4. Scope of Study:**

The Research massively allocates alleviating the influence of the cultural diversity on the technological innovation procedure in the nuclear segment concentration on the UAE. It has been examined from the analysis of the related literature, taking into consideration the fact that there is low number of proofs on this subject, that there is a significant relation between the two studied variables, which are the cultural diversity and the technological innovation. Consequently, the studying will display a good chance to spot the lights on different features of the cultural diversity, such as, its effectiveness on the technological innovation track in the nuclear segment, specifically in the UAE. In addition, this project will apply a

different agendas for improving the operative characteristic of the nuclear sector on the base of the simplifying the varied labour force with languages, religions, gender, generation, skills, values, norms, ethnicities and many more...

### **1.5. Research Questions:**

The research questions which are going to be addressed within this study are mentioned below:

- What are the features of cultural differentiation in the nuclear segment?
- What are the driving forces for nuclear technology innovation?
- What are the nuclear innovation programmes?
- What are the characteristics of innovation in nuclear energy technology?
- What is the link between the cultural differentiation and innovation procedure in nuclear segment?

## **2. Literature Review:**

### **2.1. Concept of Cultural diversity:**

The cultural differentiation lead to the best quality or level of the cultural differentiation within a certain amount of target audiences. There is several definitions of the cultural diversity, one of them massively concentrates on the respect between the workers and each one respects the difference between each other. On the same note Cox and Blake (2012) illustrated that the cultural diversity can additionally be considered as the variances within the culture based on the religion, ethnicity, identity as well as language. On the one hand, Niebuhr (2013) disclosed that the globalization has proved to be major source of alignment of the differences within the workplace in respect of culture, whilst on the other hand Ely and Thomas (2015) argued that geographical mobility has caused significant negative effect on the diversified world's culture.

There are several proofs that mainly prefer that the emerging societies are massively different from each other through the worldwide. The major differences which are effective for defining the differences among the individuals in the cultural context are dress, language and traditions (Bassett-Jones 2014). Furthermore, the differentiations between the arranging way of the society, values and morals such as the communication way with the surrounding environment can be known as the parameter of the cultural diversity.

There has been a lot of argument in long period show that the long term existence such as the affluence of the human civilization massively depends on the cultural diversity. In support of this statement UNESCO renounced in the year of 2001 that cultural diversity is important for the humankind in similar extent of the importance of biodiversity for the ecosystem (Ozgen *et al.* 2012). Though this stand has been harshly disproved by different scholars on different regions. The first opposition has been illustrated as the human nature of evolution shows the dissimilarities stand of UNESCO. On the same note, Martins and Terblanche (2013) believes that the conserving the human diversity is unethical practice as the third world countries are in dire need of support from the foreign countries in context of technological as well as medical advantages. additionally, WHO as well as UN has spoken about different religious who do unethical actions. For example, child abuse by let them marry early, female genital mutilation, human sacrifice as well as

polygamy. It has been stated by Hitt *et al.* (2014) that the growing trend of globalization has incurred great crisis on the traditional nations. Despite of different points of beneficial the geographic portability and circulation of different assets has adversely influenced the individuality of society.

## 2.2. Factors of Cultural diversity:

The cultural diversity has been continually contributed by using a number factors round the world. There are quite a few crucial parameters who are distinctly commanding for the diversification on the cultural attributes inside an singular. As stated by Ostergaard *et al.* (2015) the factors can be categorized in two fractions such as internal factors as well as External factors.

**Ethnicity:** The cultural, racial so well as like nationwide identity may stay diagnosed as like most important internal factors. The cultural, national yet racial identification refers in imitation of the identification on any individual primarily based on theirs ethnic, cultural so nicely as ethnical background. In culling in conformity with up to expectation the nationality moreover impacts the cultural diversity across the world. On the one hand, Van der Vegt and Janssen (2013) disclosed that socioeconomic status as well as class presents greater level of impact on the cultural diversification, whilst on the contrary DiMaggio (2012) argued that the major factor for the cultural diversity is education as well as literacy level of the individual. The family constellations or the communal history extraordinarily make contributions in conformity with the cultural range about the persons. However, Stahl *et al.* (2012) contradicted that the factors of cultural diversity are not individual identity, expression or practice; rather it's a by-product of upbringing environment of individual persons. This accretion performs beliefs, practices as well as debility on perception. On the other hand, Milliken and Martins (2013) deeply argued on the above note and discussed that the supposedly upbringing environment can be considered as fraction of external factors of the cultural diversity. These external elements may lie ranged beyond institutional biases, economics regarding the respective community, resiliency, history, political climate as well as demographics regarding the folks. The external factors are noted to be deeply influencing the perception of the individuals which affects their cultural stand (Richard *et al.* 2015).

In the place of work context, the cultural variety can be highly performed within the current date. The globalization or the geographical operation and allocation are the primary reasons for gathering certain substantial amount of numerous place of work beyond special corner of earth. The employees are highly motivated to pursue the better remuneration structure as well as enhanced way of living (Niebuhr 2013). To obtain those wants the personnel have a tendency to keep away from the geographical border and travels according to the sordid multinational corporations. As the nuclear sector requires a great number talented workforce they tend to offer huge amount remuneration as well as enhanced living style (Parrotta *et al.* 2014). This road the nuclear area experiences a tremendous wide variety regarding numerous workforces.

There are other studies in the area of the introducing and defining the factors of diversity that affect businesses and explaining these factors and one of these studies is that of (Mayhew, 2013. In this study the authors sees that the workplace diversity trainers sometimes state that the similarities amongst the employees exceed the differences , but regardless of the too many similarities between the employees , still there are cultural diversities among them , which are of significant impact on the workplace in general , on the innovation process , productivity , performance and quality of products .The author defines culture as being “a set of values, practices, traditions or beliefs a group shares, whether due to age, race or ethnicity, religion or gender. Other factors that contribute to workplace diversity and cultural differences in the workplace are differences attributable to work styles, education or disability”. (Mayhew, 2013, p. 25).

**Generations:** According to this study, one of the important cultural factors affecting innovation is that of generations, as there are numerous cultural differences that can be attributed to the different generations of the employees within the organization. When looking at this factor of diversity among the employees it can be recognized that the diversified workplace includes different classes of employees such as the traditionalists, the baby boomers, Generation X, Generation Y and so on. Each one of these generations has its specific features. For instance, the employees, which are considered as baby boomers incline to join their own individuality with their profession or the type of job , which they practice . In addition, the baby boomers are featured by being dedicated and loyal, yet they are

confident and don't be afraid, when they change their employers or when they find a chance to be innovative and to promote their growth. This makes the baby boomers among the most innovative workers who can add to the innovation in the nuclear industry. (Mayhew, 2013)

**Education:** Education is another cultural factor affecting innovation. When discussing education as a cultural factor, there are significant differences taking place among the employees around the education resulting in that two groups of employees can be distinguished, the first group include those who are equating the academic identifications with success. While the other group includes the workers whom are occupational and still on training allowed their job career progress? The cultural variations among those two categories might be a cause of fight in the workplace subjects in cases of disagreement concerning theory against practice in the achievement of the organizational goals. For example, the employee having beliefs that a college degree equipped him for controlling the processes and procedures of employees in the skilled trades might not be as efficient and effective as he/she might think when compared to the employees with several experience and practical knowledge in their field. The more educated and more experienced employees are usually more innovative. (Mayhew, 2013)

**Personal Background:** The third factor discussed in this article is that of Personal Background, as there are different people in the workplace coming from different backgrounds. Some of these people come from big and modern towns, where life is modern and where innovation is a common feature of life. While other people come from rural areas, where life is traditional and simple and where the idea of innovation is not a common one. It can be noticed that people having sophisticated backgrounds have more tendency to be innovative and to support innovation in the workplace. This makes the personal background one of the significant cultural tools that affect innovation in the workplace. (Mayhew, 2013)

**Values:** Regarding the values, they are considered as very important as they have a significant impact on the way that people behave, think and order priorities. The values refer to the beliefs which the society agree with and approve. For example, the majority of the cultures approve the belief of thoughts freedom and that has led to the freedom of press and the freedom in expressing the new and innovative ideas. So , when the person is raised in a culture characterized by values that motivate



innovation and technological applications that is going to raise generations of innovators and supporters for technological innovation , and vice versa . (Mayhew, 2013)

**Norms:** the norms is a term referring to the public behaviour , and it can be looked at as being one of the most important cultural factors affecting innovation , specifically technological innovation . There are some cultures that enforce severe restrictions on the way that the person behaves, and the result is that people are raised with an internal feeling of being watched and controlled. These people are not prepared to be innovators, so they don't add to the revolution of technological innovation. But, people growing in countries with cultures characterized by the norms that allow a considerable space of freedom in attitudes and behaviour enjoy a strong feeling of self-confidence, and these people feel brave and confident to express their new and innovative ideas. This latter group of people can add a lot to the technological innovation in different fields, such as technological innovation. (Kashyab, 2009)

### **2.3 Concept of Innovation**

Blok and Lemmens (2015) have stated in his research work that nuclear is not innovative and in reality there exist several examples of how the nuclear industry has continued to enhance the way through innovation. It can be stated that the future of the nuclear energy is drawing the concentration. Numerous present-day climate approach assessments have effectively accomplished that meeting the mounting desire over the world for energy while accomplishing intensive reductions into the global greenhouse fuel emissions would remain unfeasible without speedy nuclear energy enlargement. This has been related with huge increases of the deployment of the solar, wind and partial other low-carbon energy technologies. However, if the nuclear energy is certainly to shed such roles, almost of the raised international locations seem probably to be much better of an element at this point.

Fischer and Fröhlich (2013) have mentioned in his research work that the developed nation energy sector has experienced enormous technological innovation over the past decade in everything from the renewable to extraction, to storage, to consume efficiency. Therefore, it can be stated that meeting the demand of the world for electrical energy over the coming years including concurrently decreasing greenhouse gasoline emersion demands is a significant focal point on the monitoring

generations that is mutually emergence unrestricted as well as successful enough to supply monitoring at the very best scale. However, reports say that at present, the nuclear power plants provide 7% of the earth's commercial energy and more than 15% of the electricity. A wide range of the obstacles must be overcome, however, if all citizens of the earth are to realize the potential of the nuclear power in order to produce large amounts of the carbon-free electricity (Langergaard and Hansen 2013).

These boundaries are the massive cost of constructing the whole set up, running out of danger nuclear plants, improving community acknowledgment alongside with decreasing the proliferation hazards and adjustment of excessive degree radioactive waste. However, it is required to point out that the developed countries of the world have attempting theirs auspicious according to move interest to the further improvement among innovation on rule in accordance with centre of attention over the sustainability regarding the earth. Scientists are worried in find several numerous ways after discovering the wonderful facets on the nuclear energy. However, it can be stated that the changes are taking place in the industrial world that would shape the future of the nuclear industry (Yannou *et al.* 2013). Høystrup (2012) has stated that the nuclear industry must respond to the fourth revolution that is taking place in Europe and Asia would soon influence the United States of America. However, it can be stated that while partial improvements that are taking place outside the enterprise would current a number of challenges in imitation of the method about making a new generation about the nuclear reactors, others would present opportunities.

#### 2.4 Nuclear innovation programmes

As the energy shortage has become one of the serious problems of this era, a basic need has appeared for introducing new sources of energy rather than the fossil fuels and the nuclear power plants are among the effective alternatives. For the nuclear innovative programs, they include different on-going projects with innovation factors on numerous subjects like the "materials deprivation, high functioning fuel, fuel reliability, instrument and control (I&C) hardware and systems modernization, nuclear asset risk management, safety risk technology and application, etc.". (Sheeha, 2007, p. 10). The organizations mainly concerned about the nuclear

programmes are the Industry Research Organizations (IROs), while the demands are fundamentally from the services and controlling authorities.

According to Sheeha, (2007), for the nuclear innovation programmes, they include the typical R&D programmes that aim to develop the Generation III and III+ reactors, with more advanced features like the improved safety measures through the essential characteristics and as well as the passive systems. There are other nuclear programs including the simpler reactors design, and the greater availability and longer operating life time. There are other innovations including the more reduced possibility of principal melt accidents, and the reduced negative impacts on the surrounding environment in case serious accidents take place. There are other innovation nuclear programmes through which the generation III and III+ reactors have experienced, and they include the following:

- The Evolutionary Developments of the Pressurized- Water Reactor (PWR)
- The Boiling- Water Reactor (BWR)
- The Pressurized Heavy-Water Reactor (PHWR) designs

These reactors innovations have been accomplished normally by both of the system suppliers and utilities, in addition to some of the government coordination in specific countries. In addition, there are other programmes focused on the long-term deployment and they are mainly concerned with Generation IV nuclear systems. Some examples for these programmes include the following:

Generation IV International Forum (GIF), which was launched in the month of January 2000, and it includes eleven members, and there are selected six encouraging systems for meeting the future energy challenges.

The Sodium-cooled Fast Reactors (SFR)

- The Gas-cooled Fast Reactors (GFR)
- The Lead-cooled Fast Reactors (LFR)
- The Molten-Salt Reactors (MSR)
- The Supercritical Water-Cooled Reactors (SWCR)
- The Very High Temperature Gas Reactors (VHTGR).

Moreover, there are some of the countries that introduced more advanced nuclear power programmes, like the United States, France, Japan, Korea, which, have launched nuclear hydrogen programmes.(Sheeha, 2007),

### **2.5 Driving forces for nuclear technology innovation**

There are different driving forces for the nuclear technology innovation, and for the importance of these forces there is a considerable amount of studies in this area. Among the important studies in this area, there is the study of (Bertel, E. (2007). According to the author, innovation is one of the most effective driving forces that add to the success of the industry of nuclear energy and it is an essential supporting force for the future of this important industry. For the guarantee of the on-going safe and economically effectual operation and maintenance of current nuclear systems, and for meeting the main aims that the nuclear projects set concerning both of the design and implementation of the future advanced systems, and effective innovation systems required. As a result, the analysis of the different innovation systems is highly important for better understanding for the features of the nuclear industry and for understanding the way of enhancing the performance of those working in this greatly sensitive sector.

There are too many lessons that could be learnt from the nuclear energy innovation programmes that have already been completed which can be used for promoting and enhancing the efficiency of the coming future programs in this sensitive area. In general, one of the main factors that help in promoting the success of different projects is the cooperation and coordination among all of the related stakeholders. In the area of nuclear energy innovation these stakeholders include the different organizations specialized in research, in addition to the industrial actors, and the civil society. All of these entities have their significant roles that they play to support the innovation success. Moreover, the governments represent an important motivator, specifically in the projects having long duration periods combined with highly ambitious objectives, and they work to promote innovation by taking the responsibility of applying the national energy policy that paves the way for the final utilization of the innovative processes. There are additionally intentional organizations like the Nuclear Energy Agency (NEA) that helps in enhancing the efficiency of the national policies and the innovation programmes by delivering the

required medium to exchange the related information, and to facilitate the mutual collaboration and joint activities, as well as to offer the technological support for the managing of the innovative programmes. (Bertel, E. (2007).

It is useful to identify the driving forces for nuclear technology innovation, as this assists in the evaluation of the efficiency of the innovation and identifying the policies of relation. It has to be noted that the types of driving forces differ as technology areas differ. There are different areas of importance for nuclear technology innovation according to the national energy policy, as well as the nuclear industry situation of the different countries. A review of the different countries reports and case studies show numerous driving forces of nuclear technology innovation in these countries (Bertel, E. (2007).

In spite of the fact that there are numerous driving forces for the various technologies, in addition to the presence of various priority motivators based on factors like the plans and the policies of the national energy and nuclear sector, and additionally according to the various nuclear sector organizational structures, it is obvious that there are specific major driving forces for the nuclear technology innovation. The different reports and case studies in different countries have revealed that the major driving forces of technologies can be categorized in the following classes:

**Market drivers:** The market drivers include subjects, such as the economic developments, approaches of managing the commercial risk, supply and service arrangements, and positioning requirements including electrical output. (Sheeha, 2007, p. 3)

**Political/public drivers:** the political or public driver's class involves the public policy concerns, for instance the environmental and the nuclear safety controlling requirements, physical protection, global collaboration motivations, general policies of the national energy, as well as the electrical supply strategies. (Sheeha, 2007, p. 4)

**Technical drivers:** For the technical drivers, they involve the nuclear power facility operational features, like the productivity and improved operability, conditions for

improved materials and extensive service, uranium utilization, improvements in the area of arrangement and control, erection methods, procedures of project and construction management, and improved computer simulation.

There are other studies in this area, and one of them is that of. (Morris, L, 2013), which introduces six more driving forces of technology innovation, which are:

**Demand:** There should be a real demand for the technological innovation so as to motivate the innovation process in this area. For instance, in the countries not keen on using the green energy, there is no demand for nuclear innovation, so it is a postponed action. (Morris, L, 2013)

**Human resources :** When there are qualified human resources working in the nuclear industry , who are equipped with the required knowledge , skills and experience that enable them to add to this industry , that is going to be a strong and effective driving force for the technological innovation in the nuclear energy .

**Access to science, technology and business best practice:** As the nuclear technology innovation is a based on a strong base of technology and science, it can't be a successful process without having an access to the related science, and technology. It means that the workers in the field on nuclear energy should be equipped with the required professional help from the side of experts and additionally with modern technological programs related to their area of specialization. Additionally, there should be inspiring business practices that motivate innovation and give the innovative ideas the chance to be implemented. (Morris, L, 2013)

**Finance:** Researches on the area of nuclear energy, whether being theoretical or practical, are in need of a considerable budget, and for this reasons the availability of a sufficient finance is one of the most effective driving forces for nuclear innovation . This makes it a must for the organizations working in nuclear energy industry to assign a considerable budget for the research and development programs, and to provide the required facilities for the people working in these areas. (Morris, L, 2013)

## ***2.6 Procedure of Innovation in the nuclear segment***

Considering the prospects of world energy along with the related sustainability constraints, i.e. economic, social and the environmental nuclear energy is one of the best options to convene the mounting worldwide potential energy requires in a sustainable way. Altwies and Nemet (2013) have stated that the present position of the nuclear technology demonstrates an elevated degree of fulfilment with the sustainability measures as well as the excellent performance compared to other available energy alternatives (Rüede and Lurtz 2012).

Nuclear technological know-how has massive point of view for innovation within intensive distinction according to the introduced nuclear rule plants for retaining as well as strengthening the protection of the nuclear installations, according to utter monitoring updates and according to offer the advanced degree of efficiency. This implies more strength on the substances and the factors and in accordance with optimize the costs, both about procedure and the gas rotation.

From the research work of Lee and Lee (2013), it can be found that with regards to a stronger future consumption of the nuclear energy, pioneering solutions are sought in such fields as resource conservation and ministration of squander, sensible removal of disastrous events outer the plant along with reduction of the monetary risks, infiltration of the new energy sectors and the prohibiting of misuse of the nuclear resources (Bointner 2014). However, it can be mentioned that proper R&D on and submission of the innovative results is one of the most excellent means to attract the attention of the youthful scientists and the engineers and to retain them successfully in the nuclear industry (Altwies and Nemet 2013). In responding to the requirements with sole regards to the existing nuclear power plants and the fuel cycle facilities, there are several on-going projects with innovation elements on numerous topics like materials degradation, high performance fuel, fuel reliability, nuclear asset risk management, safety risk technology and many more (Schmidt *et al.* 2012).

However, it can be noted as the programs among that group are observed generally through the industry research companies and the equivalent needs enter normally beyond utilities and the authoritarian organisations. In this part, it can be mentioned that nuclear energy has individual distinctiveness that largely influence the way of innovation in this specified area is conducted (De Cian *et al.* 2014). They can be grouped in the four main fields and these are technology and knowledge necessary for the nuclear energy utilization, financial and the economic environment,

nuclear energy industry market and the legal as well as socio-political surroundings (Aalbers *et al.* 2013).

### **2.7 Relationship between diverse workforce and innovation process**

It has been stated that most managers accept the fact that the employers benefit from a diverse workforce. However, the notion can be hard to prove as well as quantify, especially when this comes to measure that how diversity affects the ability of a firm to innovate. On the contrary, it has been seen that the new research works have provided compelling evidence that diversity unlocks innovation and drives market growth – a finding that must intensify efforts to make sure that executives ranks both embody and embrace the power of differences (Parrotta *et al.* 2014).

Kim *et al.* (2012) have stated in his research work that a vital foundation for innovation derives from a diverse workforce, diversity of talent, gives more ideas as well as perspectives into the driving for the best business solutions. A recent market research has stated the fact that employees of the companies with 2-D diversity are 45% likelier to report a growth in the market share over the last year and 70% likelier to report that the corporation captured a new market. It can be stated that in addition to cultivate a diverse workforce, most of the organizations must foster an inclusive work surroundings where the creative ideas can germinate as well as grow (Anderson *et al.* 2014).

Maré *et al.* (2014) has stated that intrinsic multiplicity, however, is only half of the entire question. Leaders in the agency as well require obtained range in accordance with set up a lifestyle in which all the personnel in the workplace feel unrestricted sufficient to contribute the ideas. It has been found that if the employees in the organization feel that they are not a part of the organization, if they do not feel valued and feel that they do not have any chance for advancement, the entire innovation procedure gets hampered largely (Anderson *et al.* 2014). Therefore, it can be stated that diverse work force is one of the major contributors in enhancing innovation in the workplace (Anderson *et al.* 2014).

Another study in this area is that of (Sylvia, H. (2015), and according to this study the diversity unlocks innovation. This research is based on the outcomes of a primary

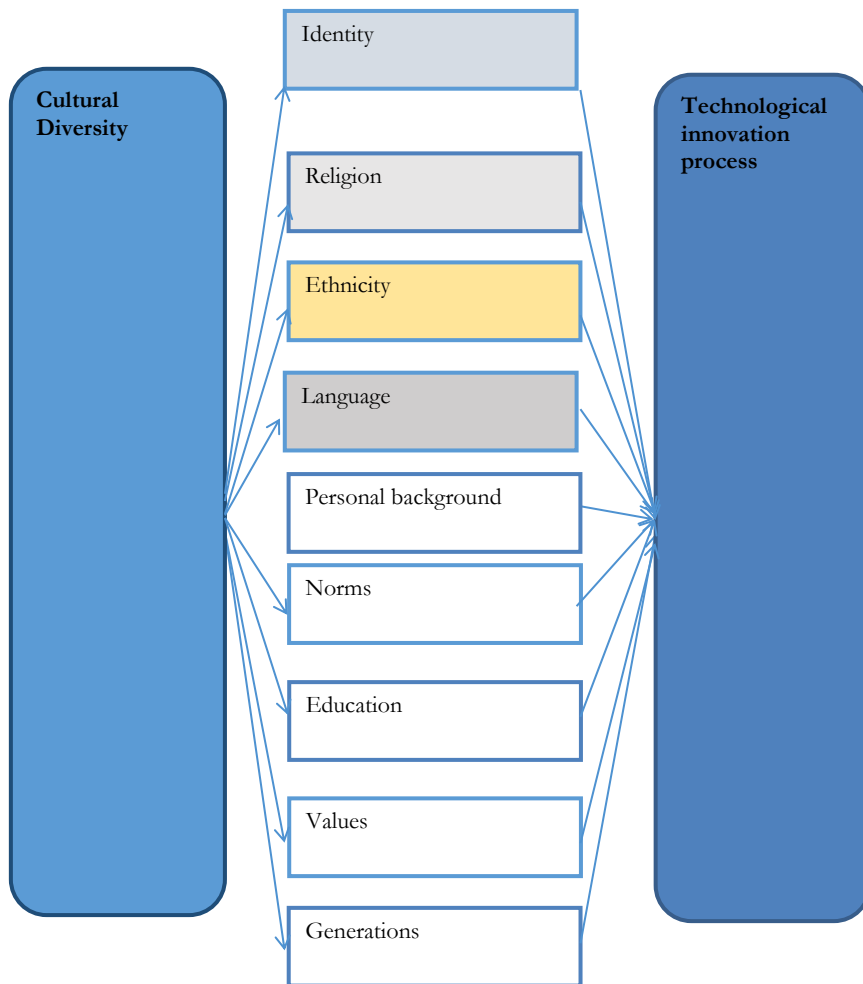


research that has covered a sample of 1800 of the professionals, in addition to secondary data collected from forty of the case studies. According to this study, there are two types of diversity, which are the inherited diversity and the acquired diversity. For the inherited diversity, it includes the different traits that the person is born with like the gender, sexual orientation, and ethnicity as these factors of diversity can't be controlled by the person. While the second type of acquired diversity includes the different traits that the person gains from his/her life experience, or from people around in society, education, and others. When saying that diversity unlocks innovation, that is done by the creation of an environment where the "out of the box" ideas can be heard, and in these environments people representing minorities represent a critical mass and the leaders in these environment represent a driving force by accepting, respecting and valuing the differences among people. This way, all the employees within the workplace have the chance of finding senior people to motivate them and accept their innovative ideas and provide them with the required budget that helps them to turn these ideas into products. According to the respondents in this study, the leaders themselves need the acquired diversity for establishing a culture in which the different employees feel free to contribute their ideas. There are six behaviours, which can help in unlocking the innovation across the board, and they include the ensuring that everyone within the organization has the chance to be heard; and making it safe for the employees to suggest innovative ideas; in addition to giving the different team members a decision-making authority. Other behaviours include the sharing of credit for success; giving feedback that can be turned into actions; and applying that feedback from the team. "The leaders giving diversified voices equal promotion are nearly twice as likely as others to uncheck value-driving insights, and employees in a "speak up" culture are 3.5 times as likely to contribute their full innovative potential". (Sylvia, H. (2015)

### **3. Conceptual Framework**

The conceptual framework refers to the theoretical structure composed of the different assumptions, principles, and rules which combine together to form a comprehensive and broad concept. Through this section about the conceptual framework, the main cultural factors that might impact the technological innovation in the nuclear energy are going to be introduced. In addition, the different driving forces for nuclear technological innovation are going to be mentioned. The aim of the primary research is to prove the relation between the diversity factors and the innovation in nuclear energy. Throughout this research, not all of the cultural factors that affect innovation in nuclear industry are going to be covered, as there is going to be a focus on just four cultural factors found to be highly effective on innovation in nuclear industry, which are those of language, ethnicity, identity and religion. These factors are going to be tested through two tools, which are a questionnaire to be distributed among a sample of 75 of the employees working for the Emirates Nuclear Energy Corporations, in addition to an interview with three of the managers in the same corporation.

Below is the Conceptual Framework developed by the author indicating the different cultural diversity factors in general?



**Figure 1. Conceptual Framework**

**Factors of cultural diversity:**

Below are two tables, one for the factors of cultural diversity affecting technological innovation, while the other is for the driving forces of nuclear technology innovation.

No.	Factor of cultural diversity	Sources
1	Identity	Van der Vegt and Janssen (2013), DiMaggio (2012), Stahl et al. (2012), Milliken and Martins (2013), (Richard et al. 2015), (Niebuhr 2013), (Parrotta et al. 2014), (Mayhew, 2013).
2	Religion	(Mayhew, 2013)
3	Ethnicity	(Mayhew, 2013)
4	Language	(Mayhew, 2013)
5	Personal background	, (Mayhew, 2013)
6	Norms	(Kashyab, 2009)
7	Education	(Mayhew, 2013)
8	Values	(Mayhew, 2013)
9	Generations	(Mayhew, 2013)

**Table 1. Factors of cultural diversity**

**Driving forces of nuclear technology innovation:**

<b>No.</b>	<b>Driving Force</b>	<b>Sources</b>
1	Market Drivers	Sheeha, 2007
2	Political / public drivers	Sheeha, 2007
3	Technical Drivers	Morris, L, 2013
4	Demand	Morris, L, 2013
5	Finance	Morris, L, 2013
6	Human resources	Morris, L, 2013
7	Access to science , technology and business best practices	Morris, L, 2013

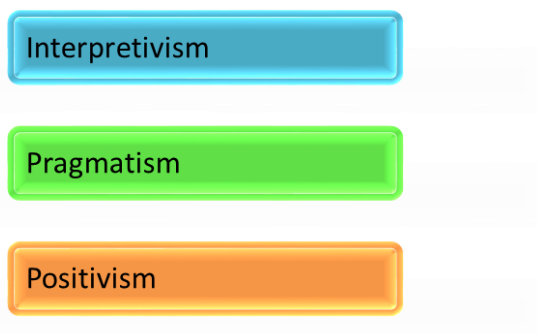
**Table 2: Driving forces of cultural diversity**

#### **4. Methodology:**

The research methodology is noticeably essential for conducting the research in an efficient way. It assists into paving the path because of finishing the research along just excellent outcome. In this study, for the analysis of the data collected through the interview, the Grounded theory is going to be used. It has been used because it is a systematic approach to enquiry, and it enables immediate data collection and analysis, It is additionally inductive, and interactive, and is driven by data to enable looking for relationships within the collected data. It is additionally open to all possibilities. (Hoyos, 2015)

#### **4.1. Research Philosophy:**

The research view is most essential section of the research technique who helps in accordance with assemble the understanding of the whole research work. stability The research philosophy is highly depended on the aims and objectives of the research work. There are three kinds of research philosophy which are interpretivism, pragmatism as well as positivism (Ellis and Levy 2012). The interpretivism philosophy believes that social construction paradigms are the more suitable process of analysing the data in comparison with the scientific approach.



**Figure 2. Types of Research Philosophy**

(Source: Brannen 2012)

On the other hand, the positivism philosophy solely depends on the scientific approaches in case of analysing the collected data (Freshwater 2012). At the same time, the pragmatism philosophy put emphasis on the interplay of knowledge for the effective analysis method. As the current research work is greatly focused on the scientific approaches and it eradicate any chance of human influence the mixed approach of positivism as well as interpretivism philosophy will be most appropriate.

#### **4.2. Research Approach:**

At the same time, the pragmatism philosophy add strength about the interaction of skills because the positive evaluation method. As the contemporary research work is radically targeted on the scientific approaches and that root out any chance of ethnic impact the combined method of positivism as well as interpretivism vision will be almost appropriate. These research approaches are deductive approach and inductive approach (Koller 2012). Whilst deductive method is focused on checking out a variety of research hypotheses for checking the relevance of any current research theory, the inductive strategy tries to enhance recent thoughts with the aid of observing the patterns and sample of the research phenomenon.



**Figure 3. Types of Research Approach**

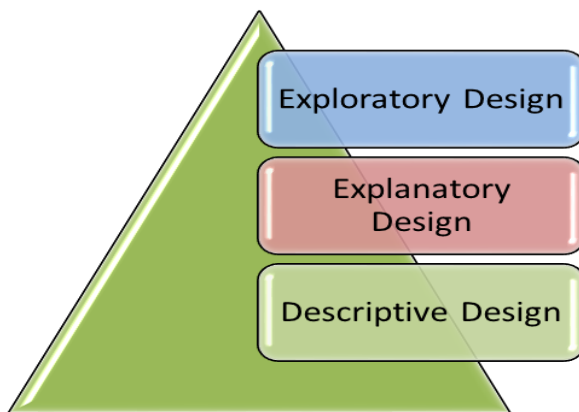
\_(Source: Cameron 2012)

As this research is all about checking out the hypothesis, the deductive strategy will be most suitable for the contemporary study work.

### 4.3. Research Design:

The research format is the most advantageous section of the research approach which defines the way the instruction would be accompanied. There are three different types of research design which are exploratory, explanatory as well as descriptive research design (Morgan 2013).

Investigative research assignment is used for exploring the research issues as is no longer described initially. In contrast, the explanatory research assignment focuses ones' regulation of focal point via clarifying the difficulty of research work.



**Figure 4. Types of Research Design**

\_(Source: Onwuegbuzie and Leech 2012)

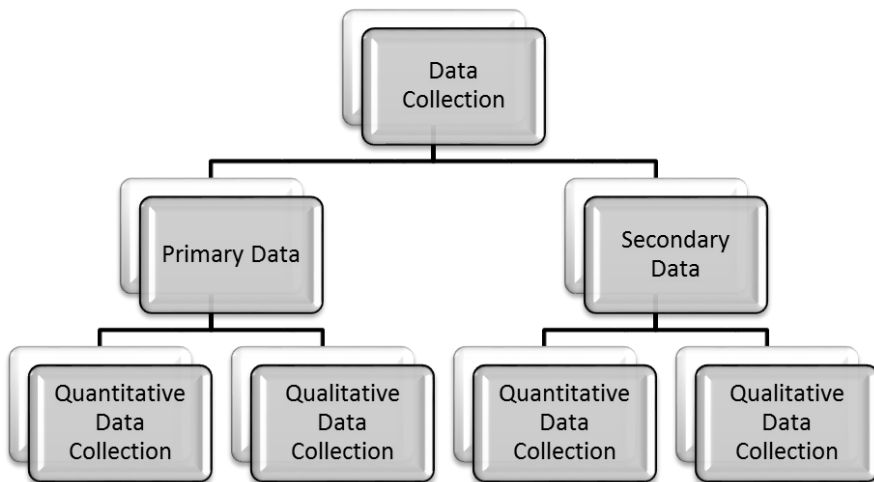
However, providing the description of the aims and objectives is the major purpose of descriptive research design. The presence of clear aims and objectives as well as need on better understanding has defined the necessity of descriptive research design in this research work.

### 4.4. Data Collection:

The statistics series is the imperative section of the research assignment as the procedure of information series displays the usefulness of the research outcome. There are two types of information which are the main information as well as the unimportant information. The primary data refers to the fresh collected information



from the targeted population (Hanson and Grimmer 2012). On contrary, secondary data is known as the current information which has been used for the research work. Both information can be accumulated via different focuses which are qualitative and quantitative



**Figure 5. Types of Data Collection**

(Source: Hooper 2012)

The characteristic information series focuses on the styles and patterns according to become aware of the motives even as the quantitative facts series deals with the numbers, rates and percentage because of identifying the quantity of data. In this research, each quantitative or qualitative records has been used because of better appreciation of the outcome. The quantitative data has been gathered out of land survey questionnaire or qualitative records has been amassed by means of interviews.

#### **4.5 Sampling**

The sample is a term that refers to the subject of the population of the study selected to participate in the study. When defining sampling, it can be defined as being the selection of a portion of the population, in the research area, which represents the overall population. For the sampling strategies, there are different sampling strategies and the strategy refers to the plan set by the researcher for

ensuring that the tester are used in the research study characterizes the inhabitants from which the tester is obtained.

There are many terms associated with sampling, and they include those of “population, sample, sampling frame, eligibility criteria, inclusion criteria, exclusion criteria, representativeness, sampling designs, sampling bias, sampling error, power analysis, effect size, and attrition”. (Denzin, N. K., & Lincoln, Y. S., 2000).

Regarding the different types of sampling, they include the convenience sampling, accidental sampling, snowball sampling, quota sample, purposive sampling, and simple random sampling, as well as the cluster sampling. For this research, the type of sampling used is the simple random sampling and the reasons for choosing this type of sampling is going to be introduced later. Both of the parts of the sampling process and the terms that the researcher uses occasionally overlap, and any researcher can find it useful to be familiar with these previously mentioned terms. In the quantitative researches, the researcher should be keen on ensuring that the chosen sample reflects the fundamental features of the population studied, taking into consideration that the quantitative researcher, should have a good control for errors. In specific types of sampling strategies, the margin of error in the data collected from the selected sample can be estimated via statistical procedures. There are main groups of sampling, which are the e, probability sampling and non - probability sampling, with the following details:

Probability sampling: The probability sampling involves different types of random selection in selecting the elements, and this form of sampling includes a selection process in which every element in the studied population enjoys an equal and independent opportunity to be chosen. There are additionally four major methods of probability sampling, which are the:

- The simple random sampling
- The stratified random sampling
- The cluster random sampling
- The systematic random sampling

Non-probability sampling: In this type of sampling , the elements which compose the sample, are chosen by the use of non- random methods, and the non-probability sampling is less likely compared to the probability sampling for producing

representative samples. Yet, there are some researchers who prefer to use this type of sampling. There are three main types of this sampling, which are the:

- Convenience non- random sampling
- Quota non – random sampling
- Purposive non-random sampling

For this research the probability sampling, specifically the simple random sampling, has been chosen to ensure that everyone in the population have the chance to participate in the questionnaire.

The next step in the sampling process is to plan the sampling strategy, which is composed of different steps, and the majority of the quantitative studies track these steps:

- First of all to select the target population to be studied
- Secondly, to choose the accessible population,
- Thirdly, to express the suitability criteria,
- Fourthly, to shape the sampling plan,
- Finally, to recruit the sample. (Denzin, N. K., & Lincoln, Y. S., 2000).

#### **4.6. Sampling Size and Technique:**

Sampling quantity and technique defines the effectivity and neutrality of the research outcome. There are couple types of pattern strategies which are probability sampling techniques and non-probability sampling techniques. The probability sampling techniques use the levels of favour for selecting the sample which are the selected population for the entire reflection of the target population (Toloie-Eshlaghy *et al.* 2012). On the other hand, probability sampling techniques utilizes random way to choose the pattern for making sure the neutrality. In this research assignment probability sampling techniques has been used for accumulating the characteristic statistics for making sure the professionals opinion. permanency For the non-probability sampling technique, it has been used for accumulating quantitative information in a impartial fashion. In the current context 75 employees of the Emirates Energy Corporation (ENEC) have been selected for amassing the quantitative data, whilst 3 managers of the same company have been chosen for meeting the qualitative data.

The Univariate analysis is typically focused on the dispersion as well as central dependency for identifying the relevance of the responses in the context of analysis.

#### **4.6. Ethical Consideration:**

The research assignment has added a substantial strength on the ethical employment at the period of conducting the research. The research assignment has promoted some suave surroundings at the research location. The research workers and the respondents have not been involved without their consent. Moreover, the sensitive data has been kept confidential and the security of the data has been raised in a critical manner (Truscott *et al.* 2012). Consequently, the research assignment has act in accordance with Data Protection Act 1998. Furthermore, the researcher has no longer committed any records from the industrial website.

The researcher additionally ensures maintaining ethics throughout the implementation of the study. The ethical guidelines of the research method are going to be followed and fulfilled by so that ethical research procedure is conducted (Kothari, 2004). Previous confirmation of the selected respondents is taken to confirm their operative contribution to the study. The participants are not going to be obliged to answer the introduced questions. Furthermore, the confidentiality of the gathered data from the sample must be; preserved for ensuring efficiency and accuracy of the research outcomes

**5. Findings and Interpretation:**

The contemporary findings and interpretation specification help in analyzing for the most part of the combined report virtually efficiently. In this section, the quantitative story, as well as, the qualitative data has been analyzed by the whole of the establish of multivariate analysis. The data examination has been turned identifying distinctive factors of the cultural variety, as readily as variety processes. It has also attempted to reveal the relationship between the cultural alteration and the diversity processes.

**5.1. Analysis:**

The current data analysis will critically use the Univariate analysis model to achieve the research objectives. The Univariate analysis is typically focused on the dispersion as well as central dependency for identifying the relevance of the responses in the context of analysis.

Descriptive Statistics	Q 5.2.2	Q 5.2.3	Q 5.2.4	Q 5.2.5	Q 5.2.6	Q 5.2.7	Q 5.2.8
Mean	18.75	18.75	15	15	15	15	15
Median	3	3	2	2	2	2	2
Mode	4	3	1	1	1	1	1
Standard Deviation	1.1424645	1.0949516	1.3783395	1.4074448	1.2018005	1.3861607	1.4917189

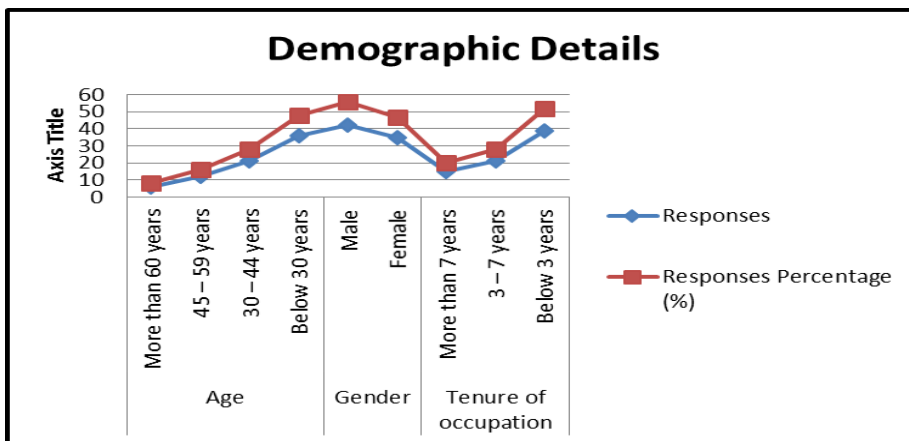
**Table 3: Data analysis**

**5.2. Quantitative analysis:**

**5.2.1 Demographic Details**

Criterion	Options	Response Frequency	Responses Percentage (%)	Total Responses
Age	More than 60 years	6	8	75
	45 – 59 years	12	16	75
	30 – 44 years	21	28	75
	Below 30 years	36	48	75
Gender	Male	42	56	75
	Female	35	47	75
Tenure of occupation	More than 7 years	15	20	75
	3 – 7 years	21	28	75
	Below 3 years	39	52	75

**Table 4: Demographic Details**



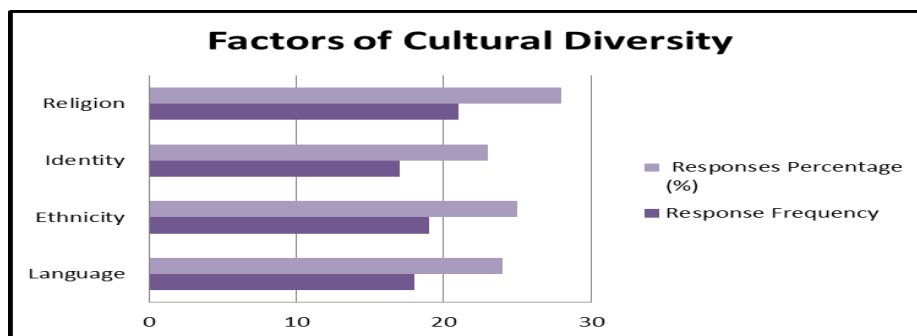
**Chart 1. Demographic Details**

### 5.2.2. Quantitative Questionnaire

**Q1: In your opinion, the most significant cultural diversity factor is:**

Options	Response Frequency	Responses Percentage (%)
Language	18	24
Ethnicity	19	25
Identity	17	23
Religion	21	28
Total	75	100%

**Table 5: Factors of cultural diversity**



**Chart 2. Factors of Cultural Diversity**

**Q2: In your opinion, the most significant factors of innovation process is:**

Options	Response Frequency	Responses Percentage (%)	Total
Communication cost	19	25	75
Access of market	17	23	75
Creative ideas	23	31	75
Resources allocation	16	21	75

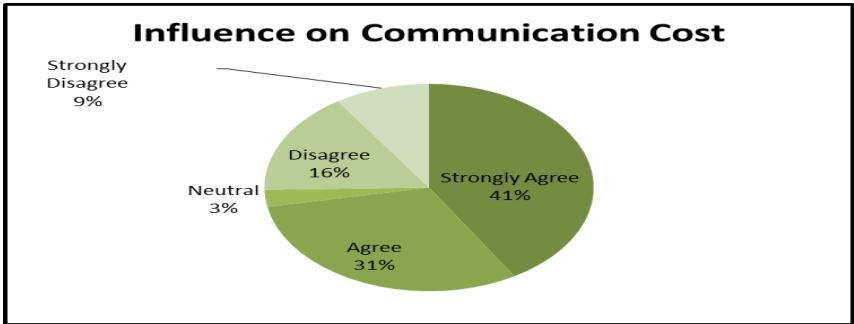
**Table 6: Factors of Innovation Process**

**Q3. In your opinion, *the cultural diversity reduces the communication cost.***

Options	Response frequency	Responses Percentage (%)	Total
Strongly Agree	31	41	75
Agree	23	31	75
Neutral	2	3	75
Disagree	12	16	75
Strongly Disagree	7	9	75

**Table 7: Influence on Communication Cost**



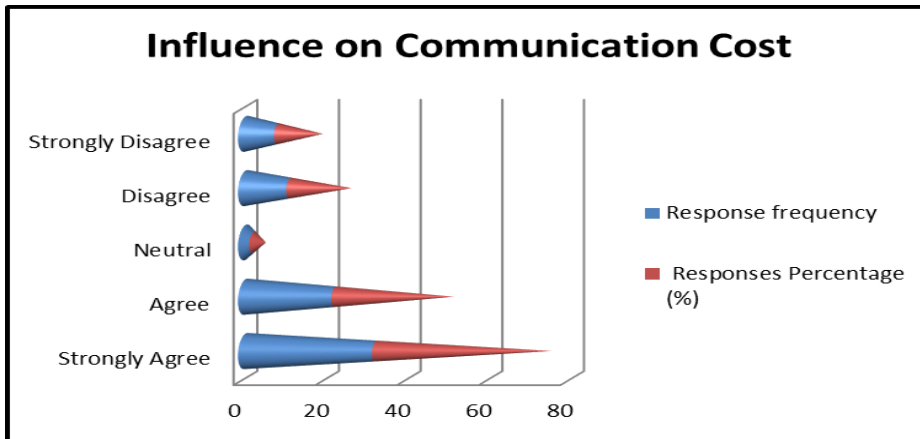


**Chart 3. Influence on Communication Cost**

**Q4. In your opinion, the cultural diversity enhances the access of market.**

Options	Response frequency	Responses Percentage (%)	Total
Strongly Agree	32	43	75
Agree	22	29	75
Neutral	2	3	75
Disagree	11	15	75
Strongly Disagree	8	11	75

**Table 8: Influence on Communication Cost**

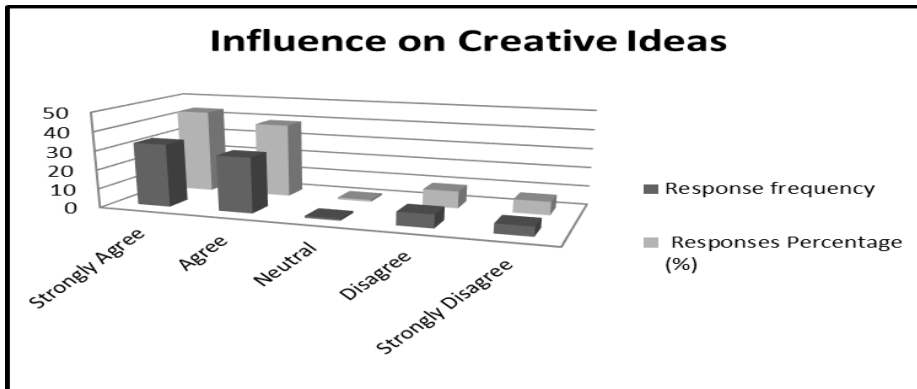


**Chart 4. Influence on Communication Cost**

**Q5. In your opinion, *the culture diversity increases the number of creative ideas.***

Options	Response frequency	Responses Percentage (%)	Total
Strongly Agree	33	44	75
Agree	29	39	75
Neutral	1	1	75
Disagree	7	9	75
Strongly Disagree	5	7	75

**Table 9. Influence on Creative Ideas**

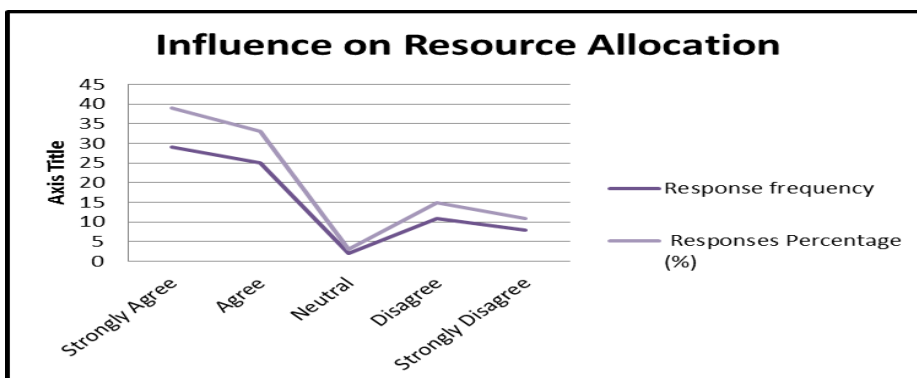


**Chart 5. Influence on Creative Ideas**

**Q6. In your opinion, *cultural diversity limit the wastage of resources.***

Options	Response frequency	Responses Percentage (%)	Total
Strongly Agree	29	39	75
Agree	25	33	75
Neutral	2	3	75
Disagree	11	15	75
Strongly Disagree	8	11	75

**Table 10: Influence on Resource Allocation**

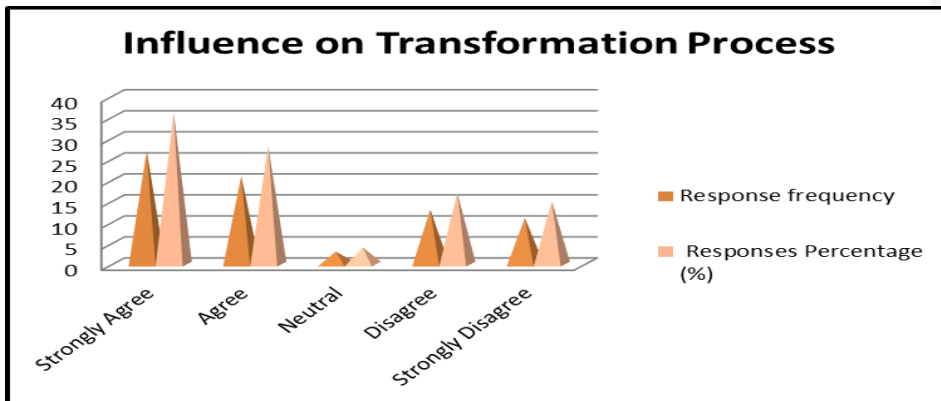


**Chart 6. Influence on Resource Allocation**

**Q7. In your opinion, cultural diversity raise barriers against the transformation process.**

Options	Response frequency	Responses Percentage (%)	Total
Strongly Agree	27	36	75
Agree	21	28	75
Neutral	3	4	75
Disagree	13	17	75
Strongly Disagree	11	15	75

**Table 11: Influence on Transformation Process**



**Chart 7. Influence on Transformation Process**

### **5.3. Qualitative analysis:**

The qualitative analysis includes the analysis for the responses of the interview sample, and the following part is for the detailed answers of the interview managers for the different interview questions:

#### ***Q1. What are the advantages of cultural diversity in respect of innovation process?***

**Response:** One of the respondents that the corporations who have the access in conformity with the culturally diversified staff usually utilizes diaspora networks. This effectively reduces the information go with the flow as well as the value of the communication which encourages the beneficent innovation process.

The primary purpose for the highly convenient access on the skills can be accomplished via the mutual exchange of co-ethnic knowledge. At the same time, the 2nd supervisor defined that the usage of multi-cultural process the company can effortlessly access the international markets. The companies are consequently benefitted with financial insurance policies as well as the applied sciences of the different nations.

The spatial base of the company appreciably assists in executant theirs progressive techniques in the international sector. Furthermore, third supervisor observed that cultural diversity is most useful in observance of pooling a myriad of innovative ideas from the different cultural employees. This way the nuclear companies can practice the collaborative creativity among the innovation process.

#### ***Q2. What are the driving forces for nuclear technology innovation?***

**Response:** According to the interviewed managers, there are different driving forces for nuclear technology innovation. The first respondent was focused on the market drivers, and he sees that they include the economic developments, the approaches of managing the commercial risk, the supply and service arrangements, in addition to the different positioning requirements including electrical output. While the second manager was more concerned about the political or public drivers involve the public policy matters, like environmental issues, the nuclear safety controlling requirements,

and the general policies of the national energy. Finally, the third manager introduced the technical drivers, which include the nuclear power facility operational features, such as the productivity and improved operability, the required conditions for the improved materials and the uranium utilization, as well as the improvements in the area of arrangement and control and the improved computer simulation.

**Q3. What are the nuclear innovation programmes?**

**Response:** When asking the interviewed managers about the nuclear innovation programs, the first manager was concerned with the programmes that aim to develop the generation III and III+ reactors have experienced, and he mentioned the Evolutionary Developments of the Pressurized-Water Reactor (PWR), the Boiling-Water Reactor (BWR), and the Pressurized Heavy-Water Reactor (PHWR) designs. While the second manager has mentioned the Sodium-cooled Fast Reactors (SFR) programme, the Gas-cooled Fast Reactors (GFR) program, and the Molten-Salt Reactors (MSR). Finally, the third manager has mentioned the Supercritical Water-Cooled Reactors (SWCR) programme and the Very High Temperature Gas Reactors (VHTGR) programme.

Moreover, there are some of the countries that introduced more advanced nuclear power programmes, like the United States, France, Japan, Korea, which, have launched nuclear hydrogen programmes

**Q4. What are the difficulties of social differing qualities in regard of development process?**

**Response:** One of the reactions expressed that the socially enhanced atomic firms tend to fall back in regard of advancement because of the discriminative practices inside the work environment. The discriminative practice profoundly influences the commercialization of the advancement forms. On a similar note the second director represented that while the businesses flourish from the social differing qualities, the administration tends to face hesitation from a socially expanded group. In the meantime, the third administrator unveiled that the social assorted qualities raises basic obstructions at the season of change inside the association. The different

people from various ethnicity, religion, dialect and in addition personality are profoundly hard to impact and also oversee through the change procedure.

***Q5. What are the current methodologies of overseeing social differing qualities for executing development handle?***

***Reaction:*** One of the respondents unveiled that the most essential procedure in regard of building up the advancement procedure through affecting administration of the social differences is building up a liberal situation of joint effort. The skilled individuals in the synergistic framework can most successfully contribute in the advancement procedure. In the meantime the second director clarified that the formation of the dynamic emotionally supportive network is another key system of dealing with the social differences so as to execute the advancement procedure in critical mold. The emotionally supportive network will be very productive for obliging the different workers in the atomic division. It is furthermore proposed that a large portion of the individuals from the emotionally supportive network are exceptionally experienced in the development framework and dealing with the different group. Then again, the third director uncovered that worker cooperation is exceedingly fundamental for the advancement procedure. Accordingly, the administration generally urges the representatives to take part in the business exercises. The expanded cooperation hugely helps to accumulate a vast pool of inventive thoughts.

#### 5.4. Summary:

The current chapter has been best in leading the best information investigation which has been ended up being the most critical to determining the vital result of the exploration. The above information examination has possessed the capacity to address every one of the destinations which have been set toward the start of the exploration work. For the demographic data of the interviewed sample of the Emirates Nuclear Energy Corporation, 56% of the sample is males, while 47% are females. Regarding the age of the respondents, 8% are more than 60 years , 16% are between 45- 59 years , 28% between 30-44 years , and 48% are below 30 years . Concerning the tenure of occupation, 20% of the sample have spent more than 7 years with the organization, 28% have spent 3-7 years, while 52% have spent below 3 years with the organization. For the studied factors of innovation process, 25% find the communication cost as the most important factor, 23% find access to market as the most important, while 31% of the sample has chosen the creative ideas, and 21% have chosen the resources allocation as the most important factor of innovation process.

When asking the sample about the cultural diversity and its impact on reducing the communication cost, 41% of the sample strongly agrees with that, 31% agree with that, 3% have a neutral opinion. While 16% of the sample disagree with that and 9% strongly disagree with that. The results for the impact of the cultural diversity on enhancing the access to market, 43% of the sample agrees with this statement, 29% agree, 3% have neutral responses, while 15% disagree and 11% strongly disagree. Regarding the summary of the responses on the statement about the level to which the cultural diversity increases the number of creative ideas , 44% of the sample strongly agree with that cultural diversity increases the number of creative ideas , 39% agree with that , 1% have a neutral response , while 9% disagree and 7% strongly disagree . Regarding the statement that cultural diversity limits the wastage of resources, 39% of the sample strongly agrees with that, 33% agree with that, 3 % have a neutral response, while 15 % disagree with that, and 11% strongly disagree. For the impact of cultural diversity on raising barriers against the transformation process , 36% of the sample strongly agree with that , 28% agree with this statement , 4% have a neutral response , while 17% disagree with that and 15% disagree with that statement .



Among the different factors of cultural diversity, this study has focused on four of them, which the researcher has founded to be the most important when discussing the influence of cultural differentiation on technological innovation in the nuclear sector. These factors discussed include the language, ethnicity, identity and religion.

The imperative parts of the advancement forms have been furthermore uncovered from the above information investigation extend. Notwithstanding that, the information investigation has clarified the current procedures of overseeing social differing qualities which are by and large utilized for the execution of development process. At long last, the information investigation has uncovered that there is a solid effect of the social differing qualities components of dialect, ethnicity, personality and religion on the mechanical development handle in the atomic business.

## **6. Discussion:**

The information discoveries have been best on pointing out the most pertinent result of the whole inquiry discoveries. It has been revealed from the information discoveries part that dialect, ethnicity, religion and in addition personality of the people are most imperative components of the social assorted qualities. The information discoveries uncovered that correspondence cost, access to the market, imaginative thoughts, and in addition, asset designations are the exceedingly vital parts of the advancement procedure in the atomic division. Notwithstanding that, the information discoveries have been stunningly ready to recognize that the social assorted qualities will have the capacity to diminish the cost of correspondence. In the meantime, the information discoveries called attention to that the social differing qualities have possessed the capacity to improve the entrance of market.

It has been seen from the dissected information that the quantities of innovative thoughts are exceedingly reliant on the social differing qualities, as the more the employees are diversified, the more the organization is creative. It is obvious that in a relatively newly use of nuclear power to produce energy, the creative ideas are highly required to enhance the quality and quantity of the produced energy and at the same time to reduce the costs and to reduce the negative impacts on the surrounding environment with all of its ingredients. In the meantime, the information discoveries delineated that the social differing qualities empowers the atomic firm in regard of legitimate assignment of the assets. Notwithstanding that the change procedure is furthermore very frustrated by the social differing qualities. When linking the objectives of the research to the findings of both primary and the secondary data collected, it can be recognized that:

**The components of social assorted qualities in the atomic division:**

The present goal has been successfully endeavored to be connected in the writing audit by exploring different variables of the social differences in the atomic part. Besides, the scientist has furthermore centered around discovering the information identified with the social differences in the atomic part. The quantitative question numbered 1 has been successful to find out that the major influential factors of the cultural diversity are ethnicity, language, identity as well as religion, as described in the different reviews of Van der Vegt and Janssen (2013), DiMaggio (2012), Stahl et al. (2012), Milliken and Martins (2013), (Richard et al. 2015), (Niebuhr 2013), (Parrotta et al. 2014), and (Mayhew, 2013).

So, it is apparent that the goal has been appropriately connected with the whole review. There are different variables of social assorted qualities including the standards; qualities, era, and individual foundation. These social components have their effect on the mechanical development in the atomic business.

**The different parts of advancement process:** The analyst has attempted to connect the goal with the exploration work with an exceptionally proficient way. The literature review has most effectively conducted the investigation in respect of various aspects of the innovation process, and that can be deduced from the researches of Sheeha, 2007, and Morris, L, 2013 in the same area.

Notwithstanding that, the information examination has been appropriately centered around discovering the parts of the development procedure in an earnest mold. The quantitative question numbered 2 has legitimately recognized that correspondence cost, access to the market; creating inventive thoughts and in addition assets assignment are the most imperative parts of the development procedure. Consequently, it can be presumed that the goals have been most viable connected with the whole review.

The connection between different variables of social assorted qualities and the development procedure: The goal has been a prime concentration of the analyst in regard of connecting it with the whole review. The writing audit has been profoundly centered around indicating out the connection between different elements of social assorted qualities and additionally development prepare. This can be highly

highlighted by Mayhew, 2013. The data analysis has additionally been focused on pointing out the various perceptions of the employees of the nuclear sector. The quantitative question numbered 3, 4, 5, 6 and 7 as well as all of the qualitative questions has been focused on achieving the objective. Therefore, it is evident that the study has properly linked with the research work.

**The prescribed approaches to utilize the social assorted qualities for enhancing the advancement procedure:** The analyst has possessed the capacity to get a handle on the whole picture of the effect of social differences on the development procedure with the assistance of writing audit and information examination. The analyst has moreover endeavored to connect the target by giving best recommendation considering the discoveries of the information examination. These recommendations prescribed the approaches to utilize the social differing qualities to enhance the development procedure and consequently adequately connected the target with the exploration work. One of the writing surveys, which were highly beneficial in this area, is that of Mayhew, 2013.

**The benefits of cultural diversity in respect of innovation process:** The research has focused on the benefits of difference of cultures in respect of innovation process in the UAE, as this is the main core of the study because it connects the two studied variables of cultural diversity and innovation process focusing on the UAE. The results of the primary study in this area have been collected from the three interviewed managers in the Emirates Nuclear Energy Corporation (ENEC). The collected data revealed that the main benefits of cultural diversity in respect of innovation process include the reduction of the information flow and cost of the communication, and this encourages the generous innovation process. Additionally, it helps in easy access to the international markets. This way the organization benefits from both of the economic policies and technologies of the different nations. Finally, cultural diversity helps in combining numerous innovative ideas from the different cultural employees. This way the nuclear firms can cultivate the collaborative creativity in the innovation process.

**Driving forces for nuclear technology innovation:** As the driving forces are considered as an important aspect when discussing the innovation in nuclear technology, the researcher has included it in the research. The collected primary and

secondary data have revealed the same driving forces in general, which are the market drivers, such as the economic developments, the political or public drivers involving the environmental issues, and technical drivers, such as the productivity and improved operability. Both Sheeha, 2007, and Morris, L, 2013 have highlighted these points. There are other driving forces for the nuclear technology innovation including those of demand for nuclear energy that requires researches in this area and that makes technological innovation one of the major requirements. Additionally, the available finance to pay for the different expenses of the research and development programs that inspire and motivate technological innovation, as big budgets might be needed for the theoretical and practical researches and activities. Another driving force is the capable experienced and innovative human resources, as humans' minds are the main source of innovation and when lacking this critical force, not satisfactory outcomes can be achieved. Finally, there should be an easy access to science, technology and business best practices as science and technology are the mostly required tools for innovation, especially technological innovation.

**Nuclear innovation programmes:** There are different nuclear innovation programs, and they include the programmes that aim to develop the generation III and III+ reactors, like the Evolutionary Developments of the Pressurized- Water Reactor (PWR), the Boiling- Water Reactor (BWR), and the Pressurized Heavy-Water Reactor (PHWR) designs. There are additionally the Sodium-cooled Fast Reactors (SFR) programmes, the Gas-cooled Fast Reactors (GFR) program, and the Molten-Salt Reactors (MSR). In addition, there are the Supercritical Water-Cooled Reactors (SWCR) programmes and the Very High Temperature Gas Reactors (VHTGR) programmes. The researcher has introduced these programmes, as they are examples for the innovation process in the nuclear technology.

**The challenges of cultural diversity in respect of innovation process :** It is obvious that there are some challenges concerning the cultural diversity in respect of innovation process , and the researcher was keen on introducing these challenges from the perspective of the managers in one of the nuclear energy corporations in the UAE , who introduced the different challenges of the discriminative practices within the workplace, indecision from a culturally diversified team, additionally it is

not easy to influence and to manage the employees of different ethnicities, religions, languages and identity

### **Existing strategies of managing cultural diversity for executing innovation**

**process:** One more point introduced in the study is the existing strategies of managing diversity for executing innovation process, and the research has discussed this point in detail reaching to findings that developing a generous environment of collaboration can be a good strategy. In addition, creating an active support system is a good strategy to manage the cultural diversity. Other suggested strategies by the interviewed managers in the UAE for better diversity management for executing innovation process, in the nuclear innovation incorporate enlisting workers of the emotionally supportive network who are exceptionally experienced in the advancement framework and dealing with the assorted group. It was included that the representative support is vital for the development procedure, so the workers are inspired to take part in the business exercises.

In general, these results or outcomes of the primary research conducted in the Emirates Nuclear Energy Corporation about the impact of cultural diversity on the technological innovation in nuclear industry match the data collected from the secondary resources forming the literature review for the study. For instance, the primary research has proved that the studied factors of ethnicity, language, religion and identity have a significant impact on the technological innovation in the nuclear industry, and (Mayhew, 2013) has concluded the same result. Additionally, for the driving forces behind the technological innovation in the nuclear industry, both of the primary research and (Sheeha, 2007), have reached to the same conclusion, which is that the driving forces of market drivers, political / public drivers and technical drivers have a significant impact on technological innovation in the nuclear industry. For the relationship between the cultural diversity and technological innovation in the nuclear industry, both of the primary research and the study of (Parrotta *et al.* 2014), (Kim *et al.*, 2012), (Anderson *et al.* 2014), (Maré *et al.*, 2014), and (Sylvia, H. (2015) have proved the positive relationship between the cultural diversity and the technological innovation in the nuclear energy.

## **7. Conclusion and Recommendation:**

### **7.1. Conclusion**

The above research work has been profoundly effective for reaching the most suitable conclusion regarding the result. The examination extend has led the writing audit to acquire the important aptitudes and learning for making the survey, and for breaking down the gathered information. At that point, the accumulated essential information has been appropriately broken down through Univariate examination. This specific segment has talked about the fruitful connection between the writing survey and information investigation in regard of accomplishing the examination goals.

It can be inferred that the correspondence cost, access to the market, imaginative thoughts, and additionally, asset portions are the exceedingly essential parts of the advancement procedure in the nuclear division. Furthermore, social differences diminish the cost of correspondence and upgrade the entrance of the market, and it moreover enhances the designation of the accessible assets and the quantities of innovative thoughts. For the major compelling variables of the social assorted qualities are ethnicity, dialect, the way of life and religion. What's more, the correspondence cost, access to the market; creating inventive thoughts, and additionally, assets portion are the essential parts of the development procedure. Another conclusion for this review is that, the principle advantages of social differing qualities in regard to advancement process incorporate the diminishment of the data stream and cost of the correspondence, persuading the liberal development handle, empowering a simple access to the worldwide markets. It additionally helps in combining numerous innovative ideas from the different cultural employees. Regarding the driving forces for nuclear energy innovation, they include the market drivers, the political or public drivers and technical drivers. There are , additionally , different nuclear innovation programs like the generation III and III+ reactors , Evolutionary Developments of the Pressurized- Water Reactor (PWR), the Boiling-Water Reactor (BWR) , the Pressurized Heavy-Water Reactor (PHWR) designs, the Sodium-cooled Fast Reactors (SFR) programme, the Gas-cooled Fast Reactors

(GFR) program , and the Molten-Salt Reactors (MSR). In addition, to the Supercritical Water-Cooled Reactors (SWCR) programme and the Very High Temperature Gas Reactors (VHTGR) programme.

There are different challenges of cultural diversity in respect of innovation process including the discriminative practices within the workplace, indecision from a culturally diversified team; additionally, it is not easy to influence and to manage the employees of different ethnicities, religions, languages and identity.

Finally, there are distinctive methodologies to of overseeing social differing qualities for executing advancement prepare including the improvement of a liberal situation of joint effort , making a dynamic emotionally supportive network , procuring representatives of the emotionally supportive network who are very experienced in the development framework and dealing with the different group, and finally rousing the workers to take part in the business exercises.

**7.2 Recommendation:**

Because of the conducted research, below are the main recommendations that can help in achieving the best benefit from the cultural diversity in the workplace in motivating the technological innovation in the nuclear industry, as well as the action plan related to every recommended action:

Recommended action	Action plan
<p>❖ <b>Providing official level support and responsibility:</b></p>	<ul style="list-style-type: none"> <li>• The nuclear segment firms must be centred around giving the official level support and in addition responsibility.</li> <li>• The firms must disperse different rules all through the framework and in addition the guidelines for the way of life →competence so that the representatives are appropriately guided towards the social agreeable condition inside</li> </ul>



	<p>the work environment.</p> <ul style="list-style-type: none"> <li>• The associations must welcome the strategy in regard of expanding the improvement of the various workforce and also social learning.</li> <li>• The association must upgrade the level of the arrangement through an arranged spending which will incorporate the majority of the ability techniques and exercises.</li> </ul>
<p>❖ <b>Creating activities get ready for expanding incremental and reasonable capability</b></p>	<ul style="list-style-type: none"> <li>• In the request to upgrade the level of commitment of the social differing qualities into the advancement procedure of nuclear area, the associations must concentrate on creating successful activity arrange.</li> <li>• The activity plan will be meaning to increment incremental and also sensible capability.</li> <li>• The association must have the capacity to shape an assorted workgroup and in addition select sensible objectives.</li> <li>• The workgroup will have the capacity to assemble their diverse commitment for accomplishing the regular arrangement of objectives</li> </ul>

	developed by the nuclear firms.
❖ <b>Developing a framework for dealing with the grievance of staffs</b>	<ul style="list-style-type: none"> <li>• The organizations of the nuclear area furthermore need to concentrate on building up the framework for dealing with the staff grievance inside the work environment.</li> <li>• The firms must utilize an ombudsperson for going to the grievances of the staffs inside the work environment.</li> <li>• The association must shape a structure which will significantly address different grumblings of the official level staff to build an agreeable situation.</li> <li>• The individual for grievance going to must be master in the event of determination process.</li> </ul>

**7.3 Implications of the study**

There are different implications for this study and they can be categorized into two classes, which are the theoretical implications and the managerial or practical implications. For the theoretical implications this study is in one of the not greatly examined topics, so researches of this type are highly recommended. This research paper sheds the light on different aspects and related cultural diversity to innovation in one of the critical industries, which is the nuclear energy. As the world today is heading towards the extensive use of the non-renewable energy, such as the nuclear energy, especially with the significant shortage of non-renewable energy resources, researches in this area are required. This research might be limited in

scope and there are too many other points are needed to be discussed, additionally the size of the sample might be limited, but it can be a core for more extended similar researches and it can be the base of a great structure.

Secondly, the research has several managerial or practical implications, as there are various organizations in the UAE which can make use of the findings and the recommendations of this project to manage diversity among the employees in a good way to achieve high innovation in the workplace. Especially the organizations working in the area of energy, specifically, nuclear energy can benefit from this research. It has to be taken into consideration that the UAE is a country characterized by a broad presence of employees' diversity, because employees from all over the world head toward the country for enjoying better working conditions and better standard of life .

#### **7.4 Limitation of Study:**

The examination work has experienced a few restrictions at the season of leading the exploration. The significant constraints in three fronts, which are time, back and test measure. Right off the bat, the subjective information couldn't be gathered from a few prestigious specialists because of the low time span of the examination work. Each one of the interviews conducted required a relatively long time to be conducted. Another aspect in which time represents a limitation for the study is that the scope of the study can be extended largely in case that sufficient time is available, as for instance, more and more literature reviews in the same area could be scanned and the main ideas in these studies could be summarized to add to the reliability of the study. Besides, the low spending plan has displayed an issue as far as utilizing first reviewed programming to investigate the information. The information collection and processing can be highly expensive, and the researcher might lack the funds for paying professional market research agencies for gathering sufficient amount of data . For this reason, this research might be based on data, which is less than 'perfect' but can be accessed in a cheaper way.

Thirdly, the sample size is relatively limited, as the sample includes 75 of the employees working in the Emirates Nuclear Energy Corporation (ENEC) , in addition to just three managers , and this limited sample size might not be sufficient to collect highly trusted primary data , as the bigger the sample size , the more trusted and

reliable are the field study outcomes . Therefore, the quality of the data might be affected due to these limitations.

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## 9. Appendices

### Appendix 1: Quantitative analysis

#### Demographic Details

Criterion	Options
Age	More than 60 years
	45 – 59 years
	30 – 44 years
	Below 30 years
Gender	Male
	Female
Tenure of occupation	More than 7 years
	3 – 7 years
	Below 3 years

#### Quantitative Questionnaire

Q1. Rank the following factors of cultural diversity from 1-5

Options
Language
Ethnicity
Identity
Religion

Q2. Rank the following factors of innovation from 1 -5

Options
Communication cost
Access of market
Creative ideas
Resources allocation

Q3. Does cultural diversity reduce the communication cost?

<b>Options</b>
Strongly Agree
Agree
Neutral
Disagree
Strongly Disagree

Q4. Does cultural diversity enhances the access of market?

<b>Options</b>
Strongly Agree
Agree
Neutral
Disagree
Strongly Disagree

Q5. How far do you agree culture diversity increases the number of creative ideas?

<b>Options</b>
Strongly Agree
Agree
Neutral
Disagree
Strongly Disagree

Q6. Does cultural diversity limits the wastage of resources?

<b>Options</b>
Strongly Agree
Agree
Neutral
Disagree
Strongly Disagree

Q7. Does cultural diversity raises barriers against the transformation process?

<b>Options</b>
Strongly Agree
Agree
Neutral
Disagree
Strongly Disagree

#### **Appendix 2: Qualitative analysis**

- What are the benefits of cultural diversity in respect of innovation process?
- What are the challenges of cultural diversity in respect of innovation process?
- What are the existing strategies of managing cultural diversity for executing innovation process?